Managed and Operated by
PANTEXAS DETERRENCE

Environmental Projects: Public Meeting

December 11, 2025

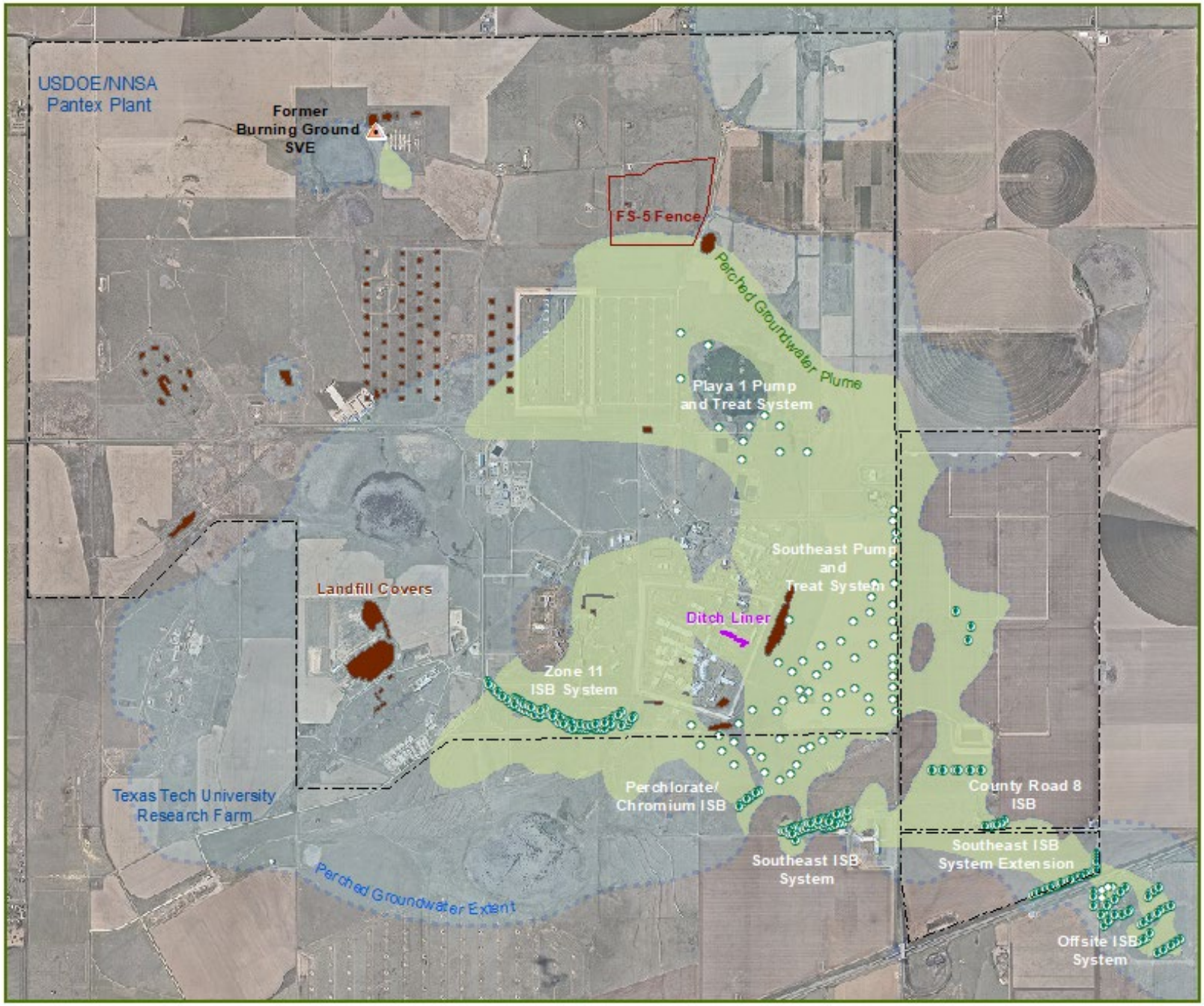
Martin Amos
Environmental Projects Department Manager

Presentation Highlights

Pantex Overview

Remedial Action Status at Pantex

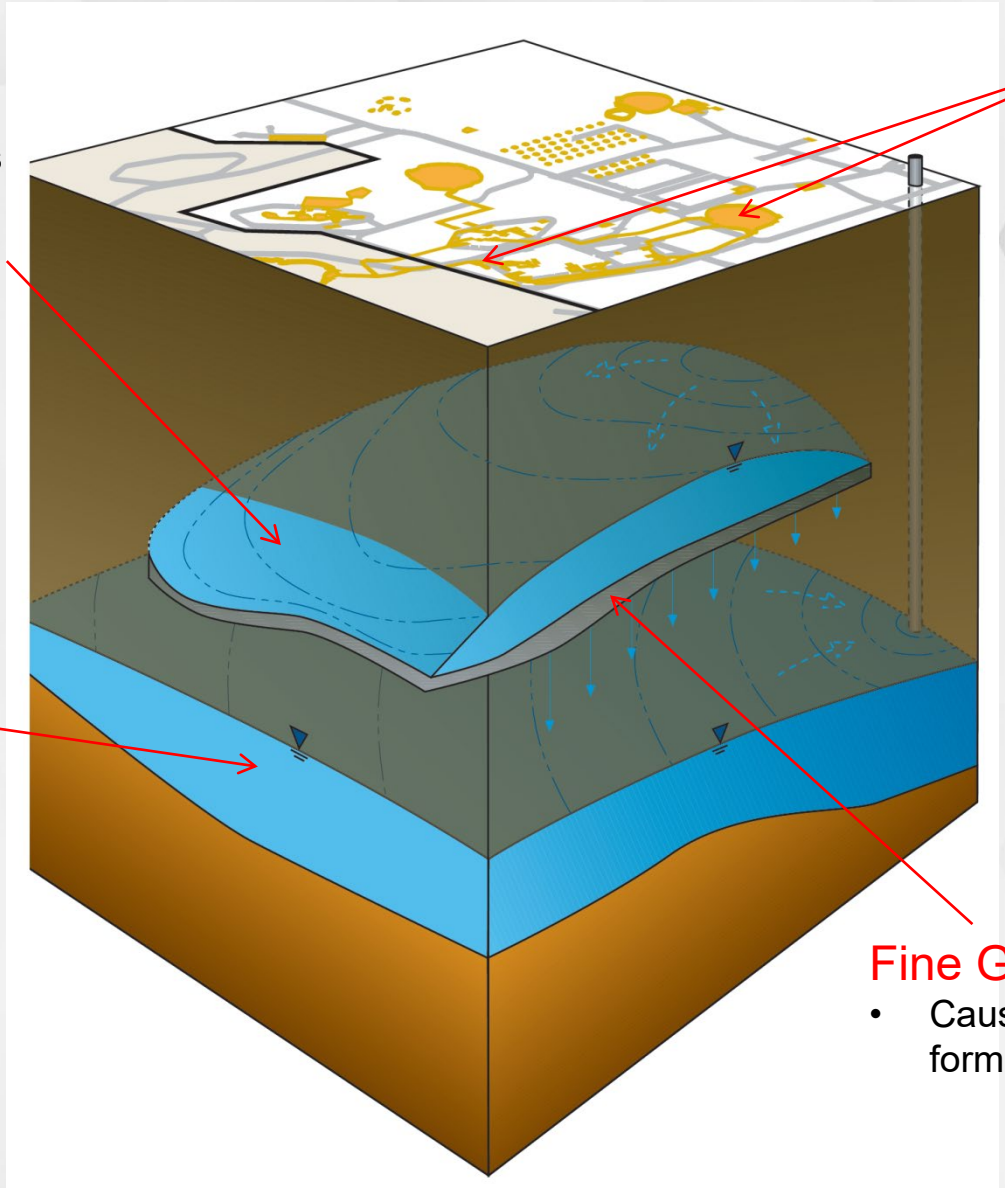
- Cleanup Actions and Accomplishments for 2024
  - Current Status
  - Pump and Treat Systems
  - *In Situ* Bioremediation Systems
  - Ogallala Detection Monitoring
  - Ogallala Investigation/Early Action
- Emerging contaminants – Per- and Polyfluoroalkyl Substances (PFAS)
- Five-Year Review (FYR)
  - 3rd FYR – Findings and Conclusions
- Data Center Land Exchange


USDOE/NNSA
Pantex Plant
Former
Burning Ground
SVE
FS-5 Fence
Perched Groundwater Plume
Playa 1 Pump
and Treat System
Southeast Pump
and
Treat System
Landfill Covers
Ditch Liner
Zone 11
ISB System
Texas Tech University
Research Farm
Perchlorate/
Chromium ISB
County Road 8
ISB
Southeast ISB
System Extension
Southeast ISB
System
Perched Groundwater Extent
Offsite ISB
System

Groundwater Flow at Pantex

Perched Aquifer

- Depth: 200-300 ft bgs
- Saturated thickness: <1 to 75 ft (avg 15 -20')



Playas/Ditches

- Past discharges of legacy wastes expanded our perched aquifer and contributed high explosives, solvents, perchlorate and chromium to perched groundwater

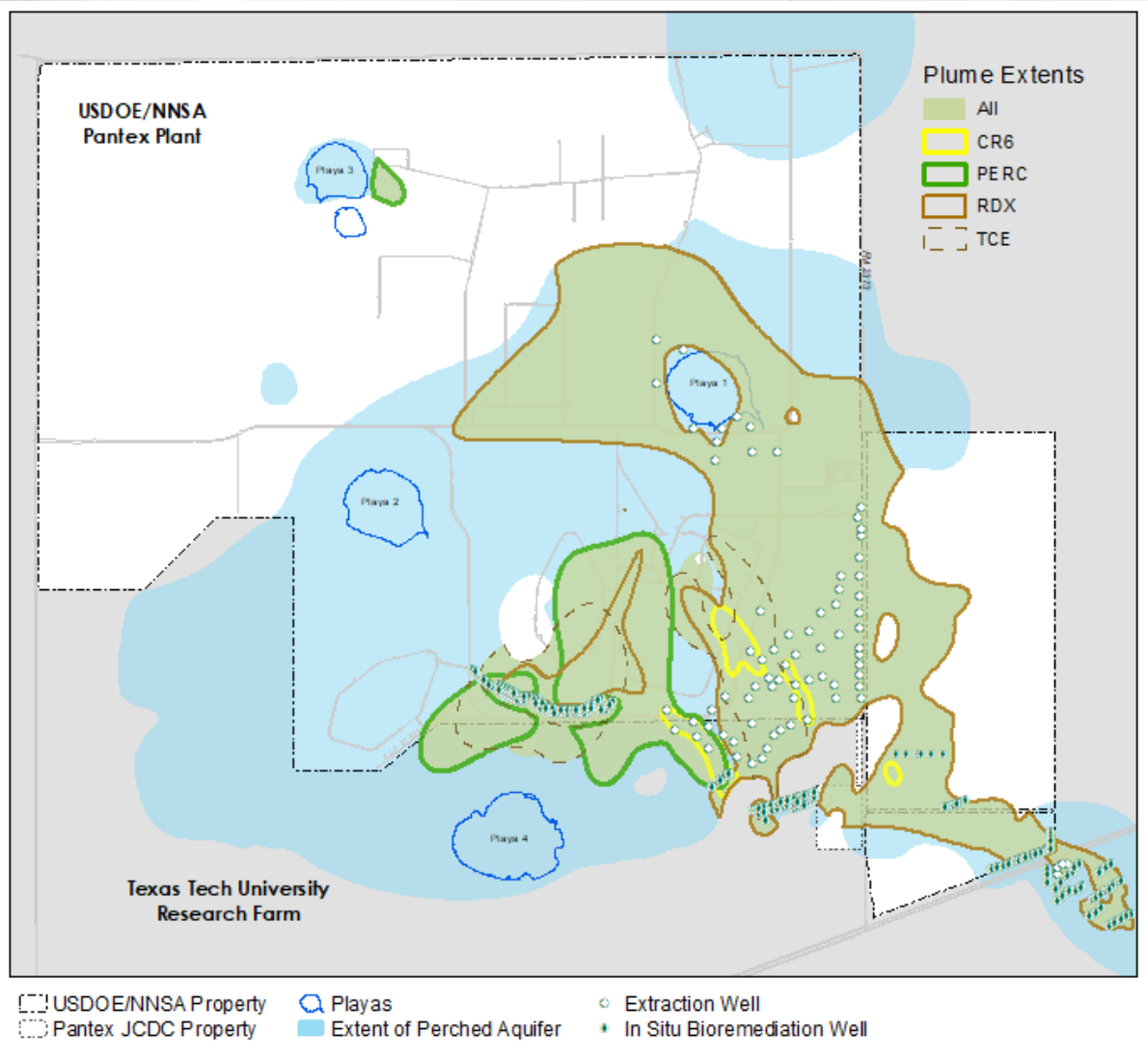
Ogallala Aquifer

- Regional drinking water resource
- Depth: 400-500 ft bgs
- Saturated thickness: 100-400 ft
- Occurs 100-200 ft beneath perched aquifer

Fine Grained Zone (FGZ)

- Causes perched water to form

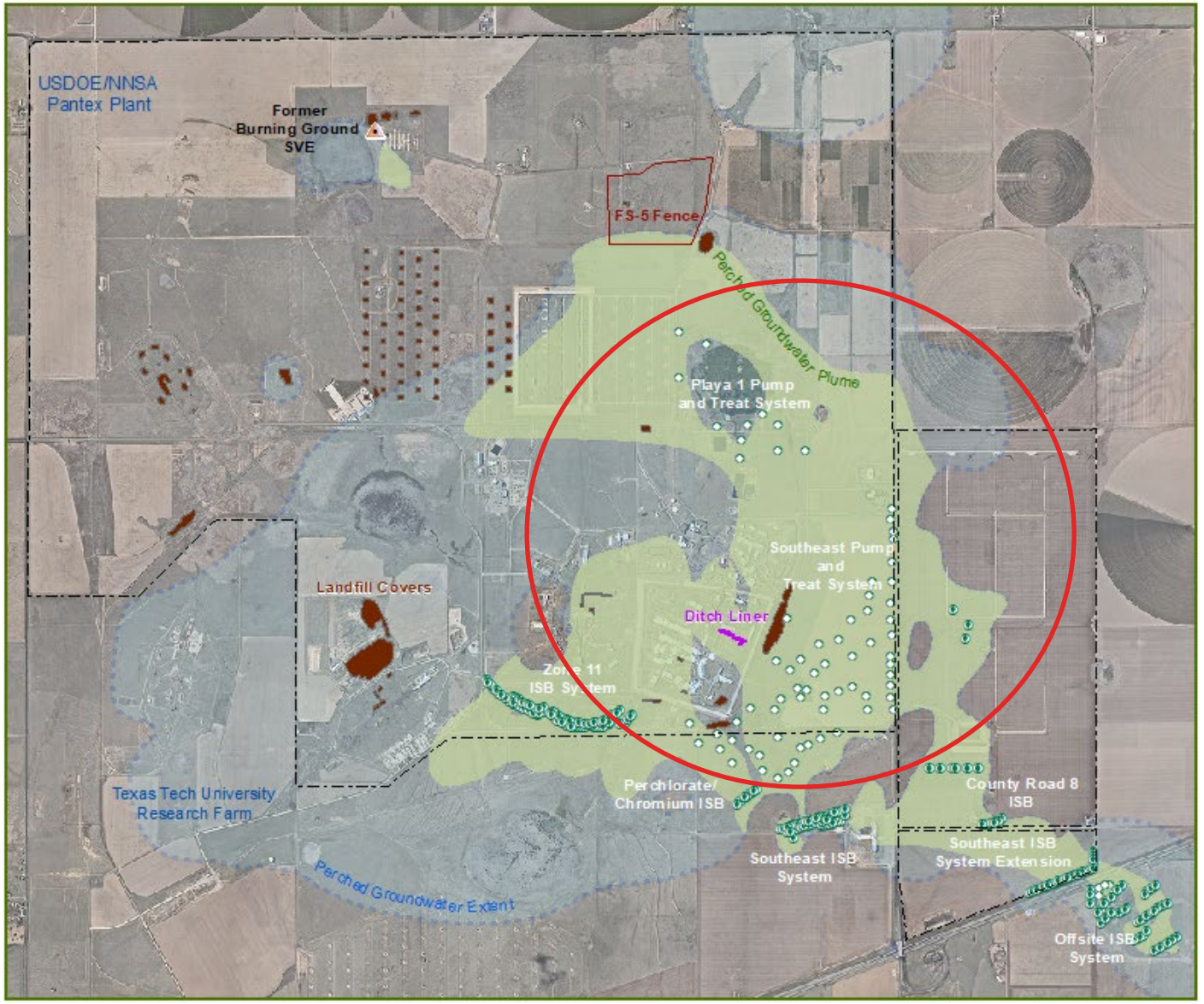
Groundwater Plumes at Pantex



- Perched Groundwater Extent as of Dec 2024
- Main contaminants:
  - High explosives (RDX)
  - Metals (Cr^{6+})
  - Solvents (TCE)
  - Perchlorate
- Mainly contained within DOE controlled boundaries
  - One area of migration offsite requiring action

Pump and Treat Systems

Pantex Plant Remedial Action Systems



Pump and Treat Systems

- **2024 Accomplishments:**
  - 173.9 Mgal treated
  - Beneficially used 33% of treated water
  - 466 lbs of contaminants removed

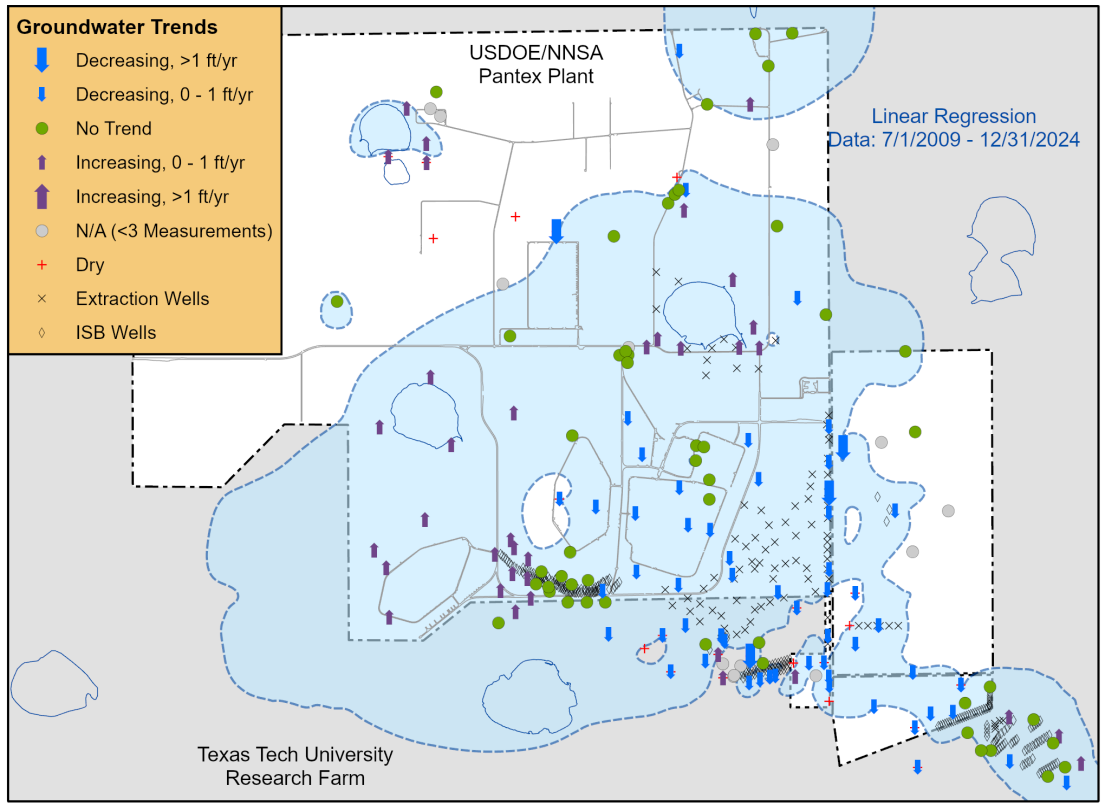
Accomplishments

Since startup:

- 3.5 billion gallons treated
- 1.9 billion gallons beneficially used
- 17,594 lbs of contaminants removed

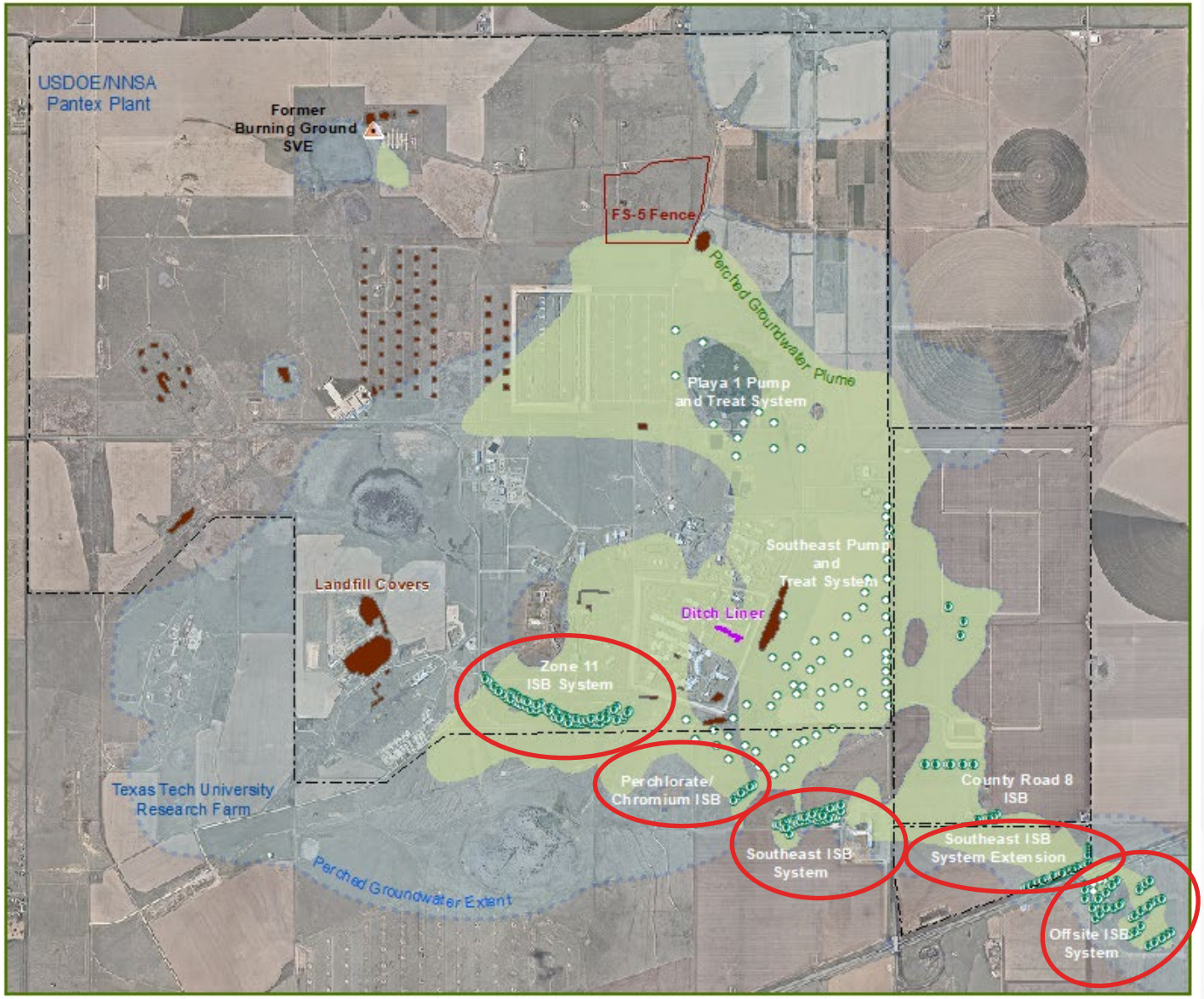
Challenges:

- Limited water storage capacity at the Waste Water Treatment Facility (WWTF) due to lagoon repairs
  - Resolution: Utilize the Pivot Irrigation system and Playa 2 injection wells as a treated water outlet
- Aging control systems at SEPTS and P1PTS
  - Resolution: Ongoing construction to replace SCADA systems at pump and treat systems according to a phased design



In Situ Bioremediation Systems

Pantex Plant Remedial Action Systems



Active In Situ Bioremediation (ISB) Systems

(1) PCR ISB:

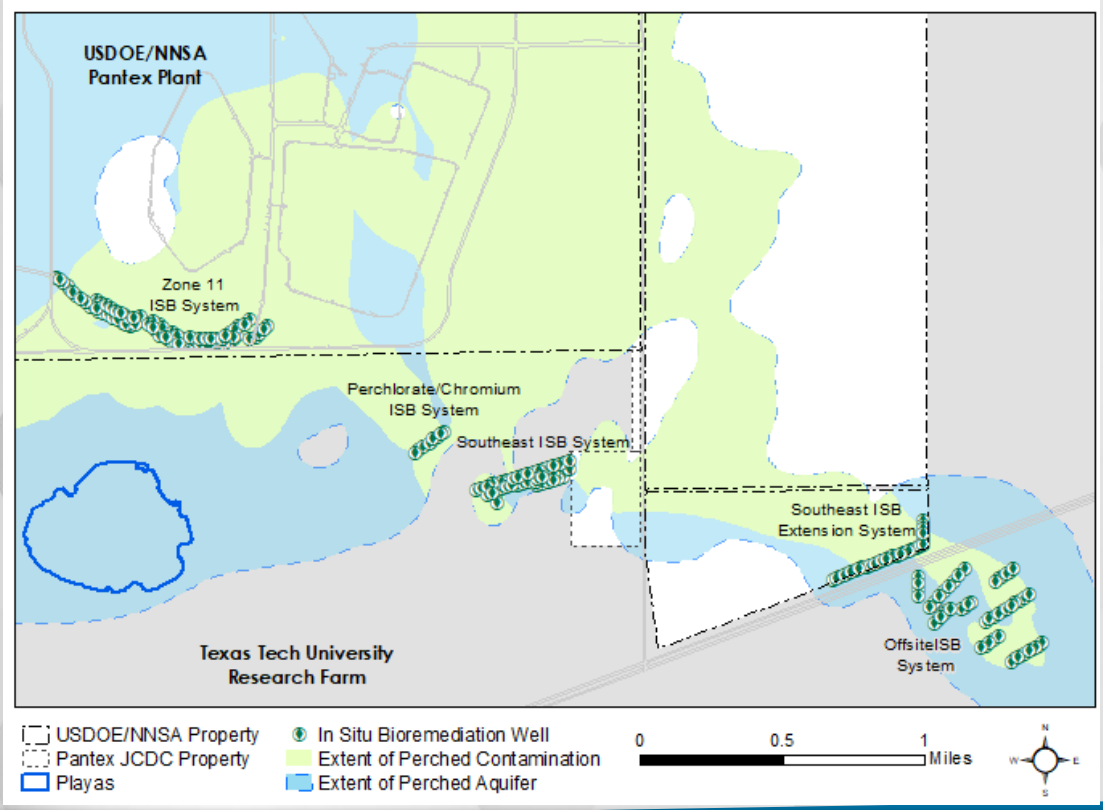
- Installed to treat the perchlorate and hexavalent chromium plumes that are moving towards the southeast

(2) Southeast ISB:

- High explosives reduced below groundwater protection standards (GWPS) at most wells
- Hexavalent chromium reduced in all wells

(3) Southeast Extension ISB:

- Continued reduction of HE expected in 2025 – early indications of treatment in Offsite Treatment System wells near the northern boundary



2024 Accomplishments:

- PCR ISB
  - Completed first injection event in 2024
- Southeast ISB
  - Planned injection event in 2025
  - Continue to monitor system for treatment
- Southeast Extension ISB
  - Completed one injection event in 2024

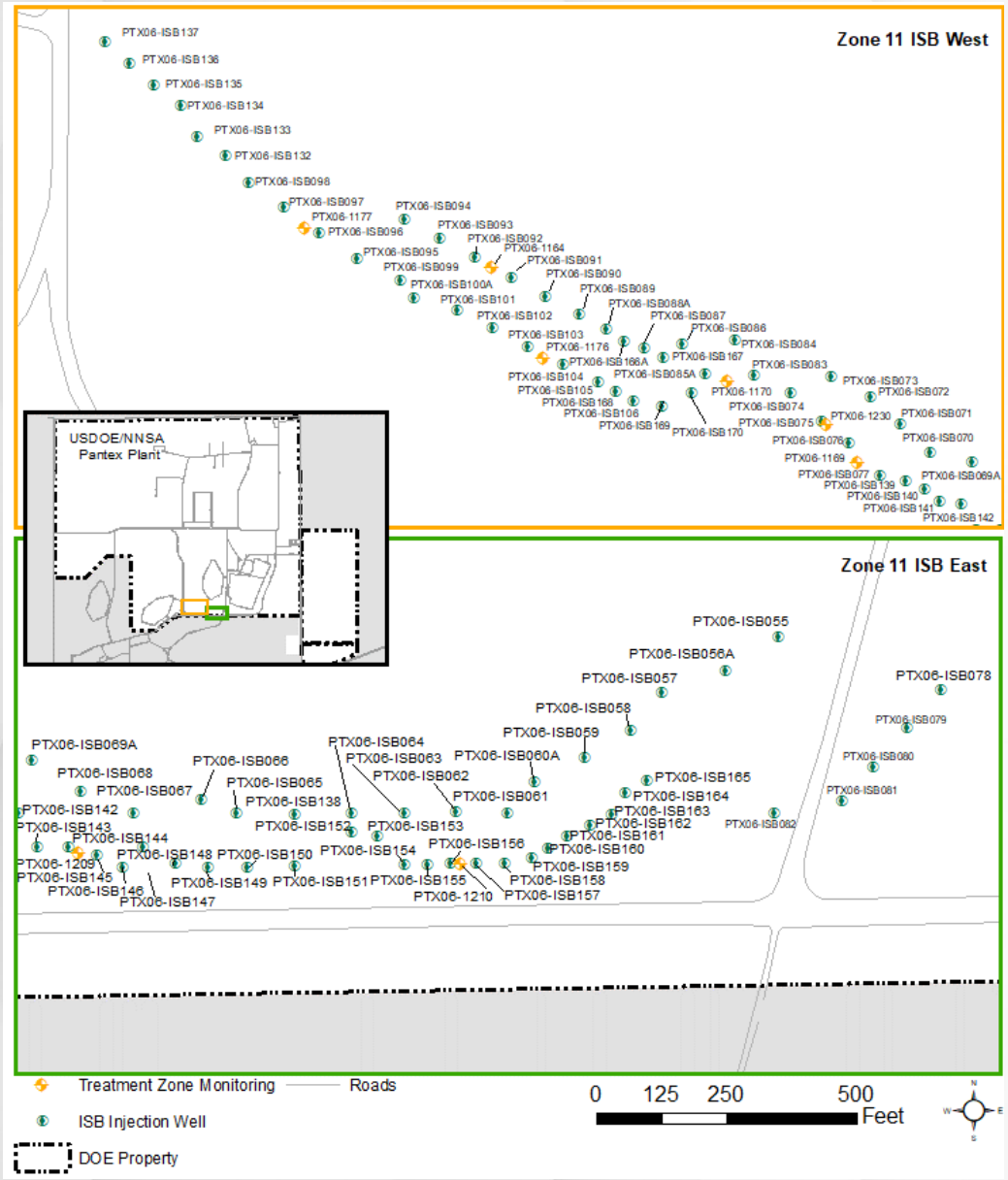
Active In Situ Bioremediation (ISB) Systems

(4) Zone 11 ISB:

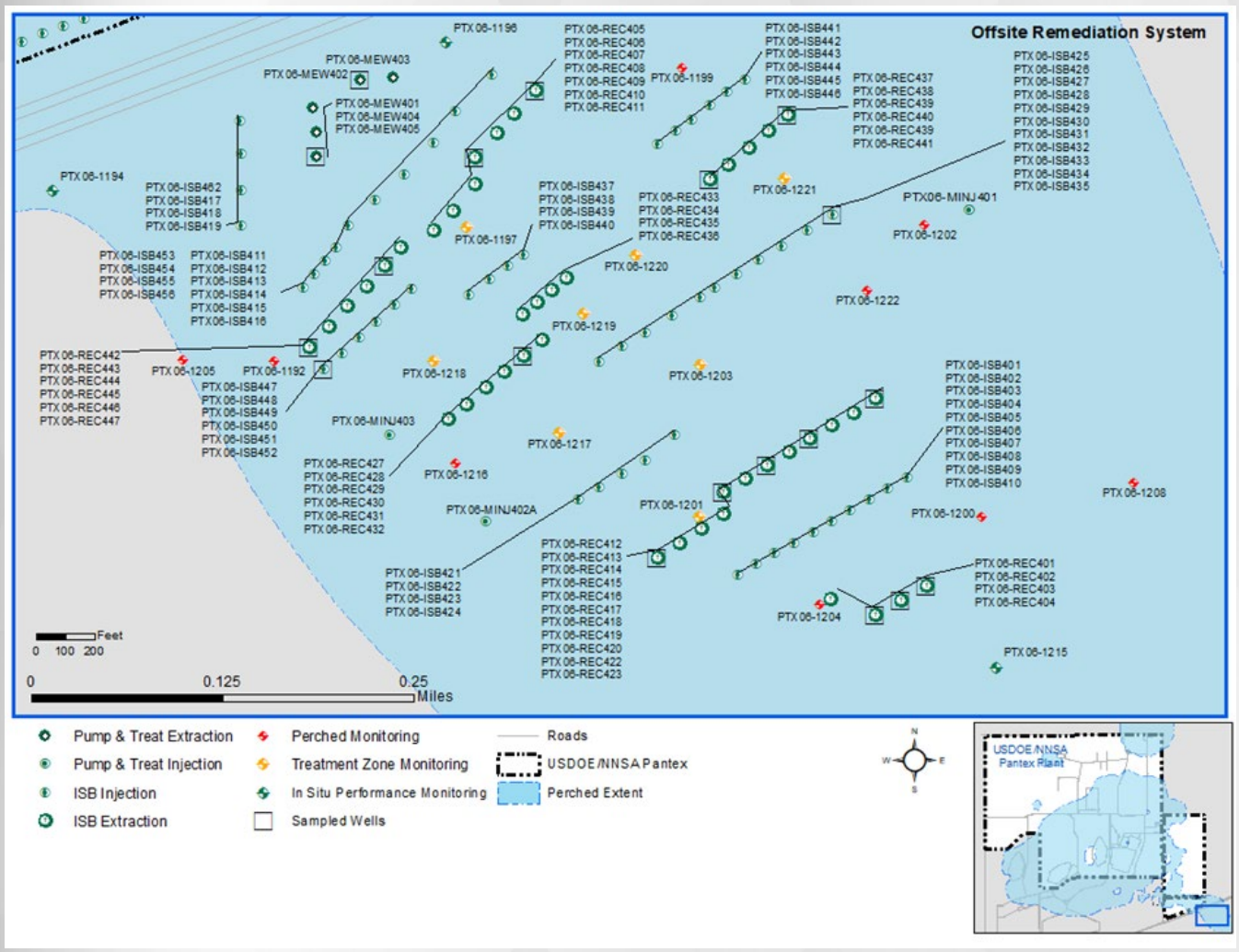
- Perchlorate and TCE reduced near or below groundwater protection standards (GWPS) at most wells

2024 Accomplishments:

- Zone 11 ISB
  - Completed one injection event on both sides of system (east and west)
  - Two new injection wells (PTX06-ISB164 and PTX06-ISB165) were installed in 2024 to extend the treatment zone further northeast to control the movement of the TCE plume in that area



Active In Situ Bioremediation (ISB) Systems



(5) Offsite ISB System

- Installed to treat the HE plume moving offsite, southeast of Highway 60.

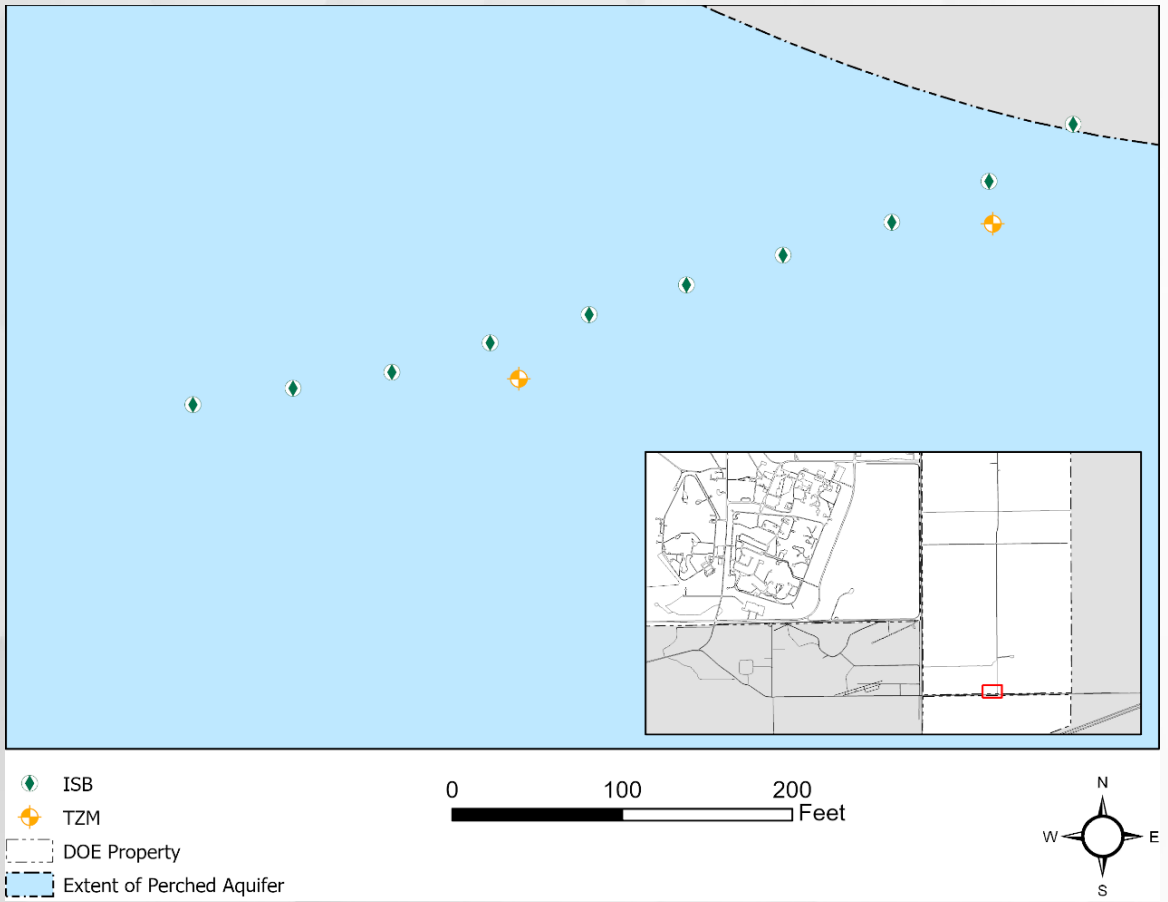
2024 Accomplishments

- Injection and well rehabilitation occurred twice in 2024
- Injected 47 wells the first round and 41 wells the second round
- Downgradient wells indicate that there are no COCs above GWPS
- System is controlling the growth of the plume
- Plume area is being treated effectively

County Road 8 ISB Progress

County Road 8 ISB:

- Installed to address the heart of the HE plume east of FM 2373
- Wells were installed in 2024
- Construction of supporting Infrastructure began in July 2025
- First injection planned for 2026

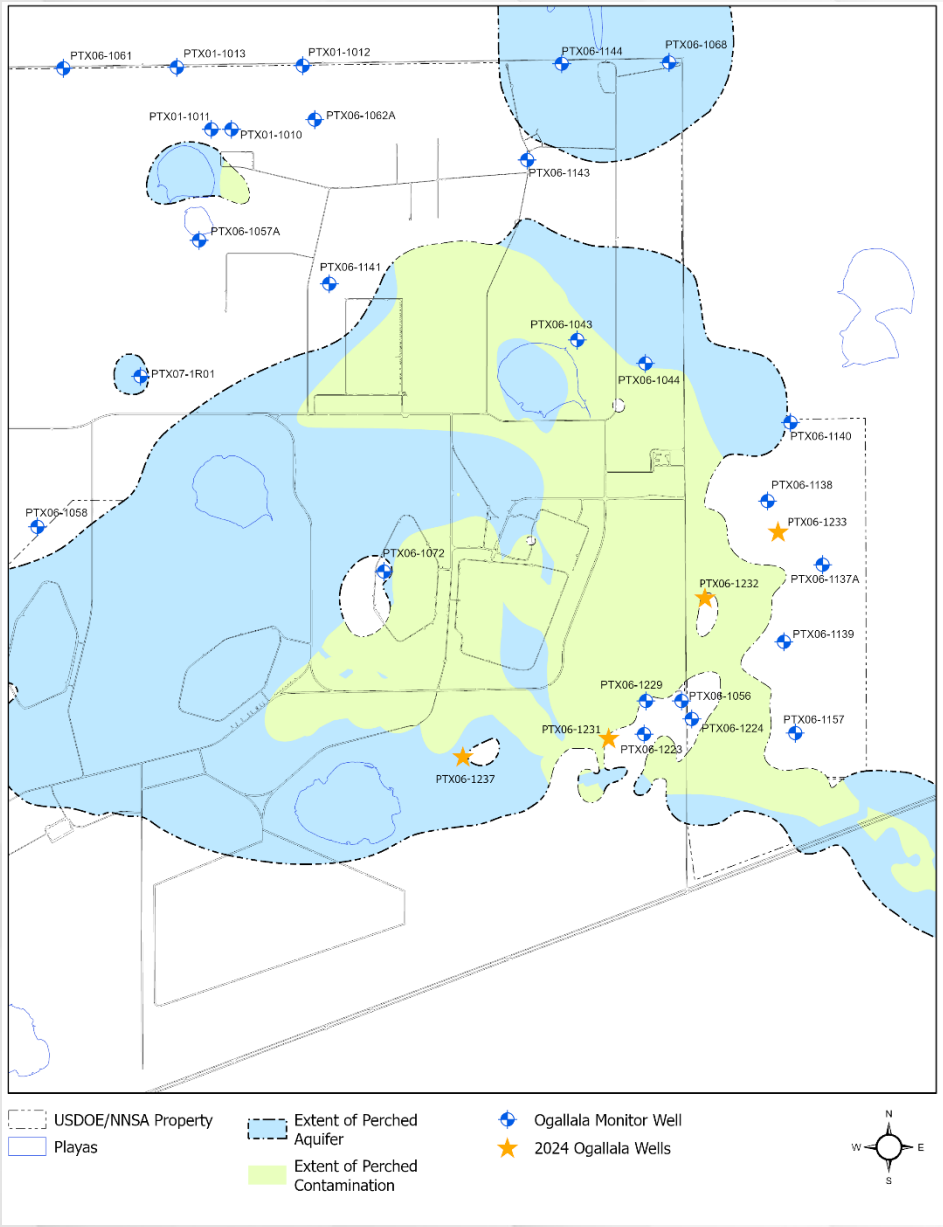


Ogallala Detection Monitoring

29 Wells Monitored in 2024:

- 25 existing wells
- 4 Ogallala monitor wells drilled in 2024 (see orange stars)
  - PTX06-1231
    - Delineate upgradient RDX concentrations
  - PTX06-1232
    - Characterize downgradient plume
  - PTX06-1233
    - Characterize downgradient plume extent
  - PTX06-1237
    - Replaced PTX06-1076

PTX06-1064, on the north side of the Plant, was plugged and abandoned in January 2025 due to damage that occurred to the well



2024/2025 Ogallala Monitoring Results

- **PTX06-1223 (6/2/2025)**
  - Continued low-level detects of DNT4A and RDX (0.6 and 1.1 ppb)
- **PTX06-1224 (6/2/2025) – All ND**

Summary of 2025 HE Detections at Newly Drilled Ogallala Wells			
Well ID	Analyte	Measured Value (µg/L)	GWPS (µg/L)
PTX06-1231	RDX	862	2
	TNX	20.2	2
	DNT4A	11.1	1.2
	DNT2A	2.68	1.2
PTX06-1232			
	RDX	27.1	2
PTX06-1233	No detects near or above GWPS		

Maximum RDX Detections at each Ogallala Well

2024/2025 Ogallala Monitoring Results

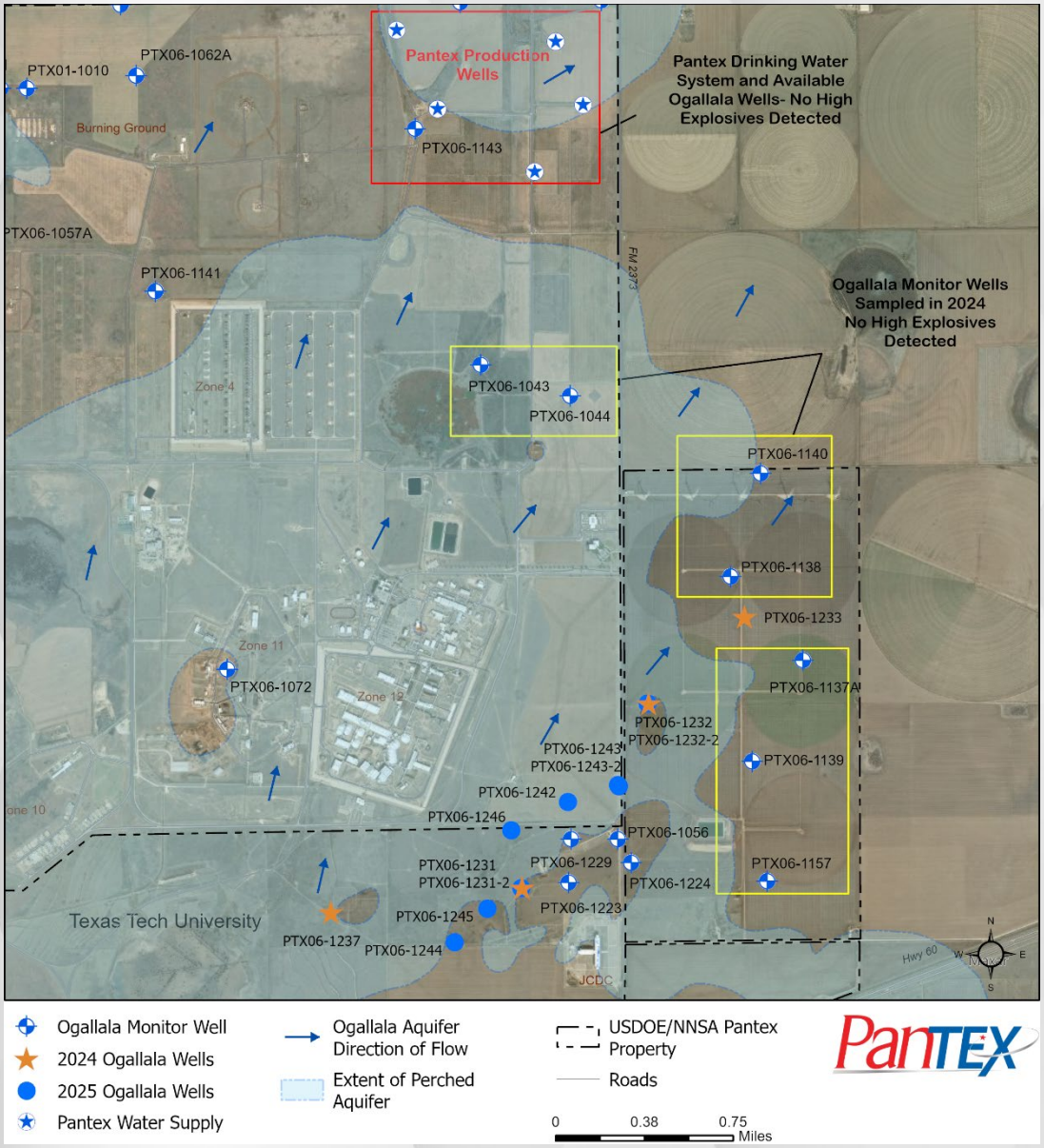
PTX06-1229 Upper and Lower Screened Interval

- Packer installed 2/24/2025 to ensure separation of the upper and lower screen intervals, configured for lower interval sampling first
- Lower interval sampled 15 weeks later on 6/9/2025
- Upper interval sampled 7/16/2025
- Similar results between the two levels
- RDX Results have dropped from maximum value of 382 ug/L in 2024

Analyte	DNT2A	DNT4A	DNX	HMX	MNX	RDX	TNX
GWPS	1.2	1.2	2	360	2	2	2
PTX06-1229	0.61	3.4	0.0424	9.08	0.13	242	13.4
PTX06-1229-2	0.475	3.4		9.78		210	15.5

Data that exceed the GWPS in red font

Ogallala Detection Monitoring



Evaluation of Nearby Wells:

- **There is no imminent threat to existing drinking, irrigation or livestock water wells in the Ogallala Aquifer from these detections**
  - 2023 and 2024 results from Ogallala monitoring wells to the north and east indicate no detections of high explosives
- **No high explosives have been detected in the Plant water supply**

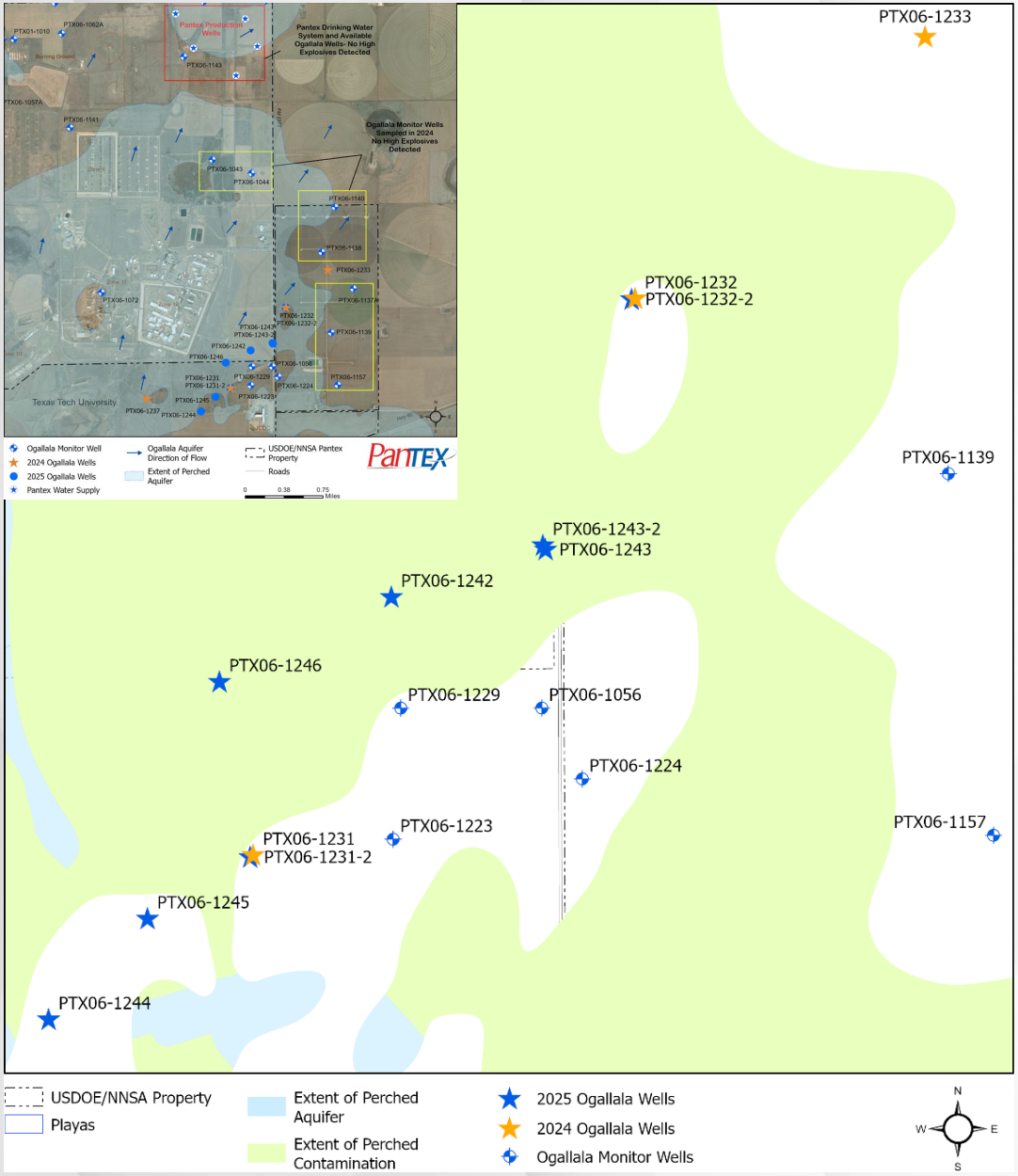
Ogallala Investigation

Pantex has contracted for the development of an Ogallala Investigation workplan that is scheduled for completion in March 2026. Investigation will continue while the work plan is developed.

8 New Ogallala Wells are being installed in 2025 (*Blue Stars):

- Further investigate vertical & horizontal extent of high explosives in the Ogallala Aquifer
- A preliminary round of sampling for these wells is scheduled for the early 2026 to gather information to guide a planned early action
- Full sampling will also occur in 2026

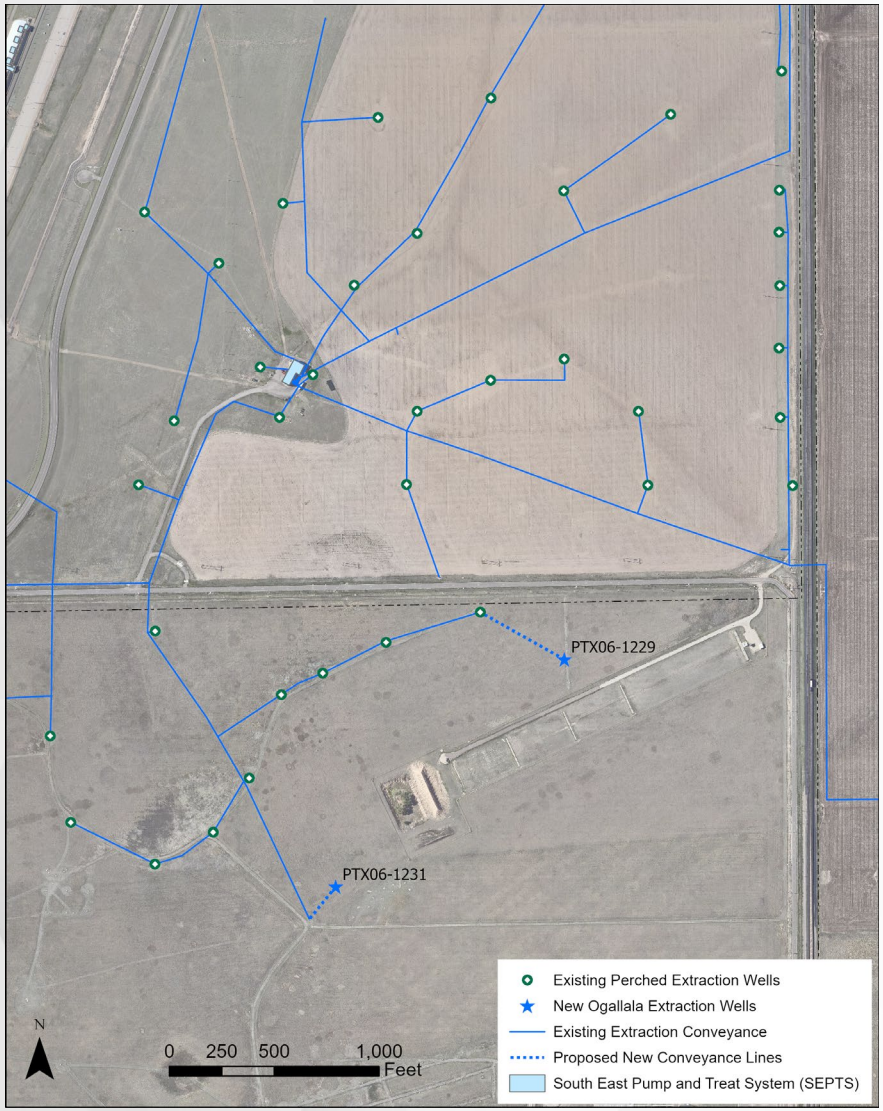
Investigation Report planned for submittal by April 2028



Ogallala Early Action

Early Remedial Action for the Ogallala and Ogallala Investigation Workplan:

- As an early action, Pantex intends to connect wells PTX06-1229 and PTX06-1231 into the SEPTS
  - Action will stabilize plume movement from areas of higher concentration
  - Other new wells will be considered for connection after initial data are collected
- Pantex is preparing an Engineering Evaluation/Cost Analysis for this action
  - Contracted for completion in February 2026
  - This document will be provided for public comment once completed – notice of public availability expected in February/March 2026
  - Once coordination with EPA and TCEQ is completed, work is expected to begin in May 2026



Per- and polyfluoroalkyl Substances (PFAS)

PFAS is an emerging contaminant

- **Common uses of PFAS include firefighting foams, non-stick cookware, waterproof gear and clothing, and grease-resistant packaging for fast food**
- **Known as forever chemicals; regulatory agencies are concerned with health issues and are in the process of developing regulations**
- **Department of Energy (DOE) has developed a roadmap to address PFAS across the complex**
- **TCEQ and EPA have respectively released protection levels for PFAS**
  - *TCEQ - Texas Risk Reduction Protective Concentration Levels (PCLs)*
  - *EPA - drinking water Maximum Contaminant Levels (MCLs)*

Following guidance from the DOE PFAS Strategic Roadmap: DOE Commitments to Action 2022 – 2025

Per- and polyfluoroalkyl Substances (PFAS)

Pantex began preliminary investigation for the presence of PFAS in the perched groundwater

- ***Have detected PFAS in extraction well fields for both pump and treat systems; both systems treat PFAS to below PCLs and MCLs***
- ***Completed sampling for PFAS across perched groundwater monitoring network in 2024, currently collecting additional samples in 2025***
- ***Currently creating a workplan for the investigation of the nature and extent of PFAS in soils and the perched aquifer to be completed in March 2026***

Pantex is investigating PFAS in the Ogallala Aquifer, along with high explosives, to support evaluation of cleanup alternatives

3rd Five Year Review

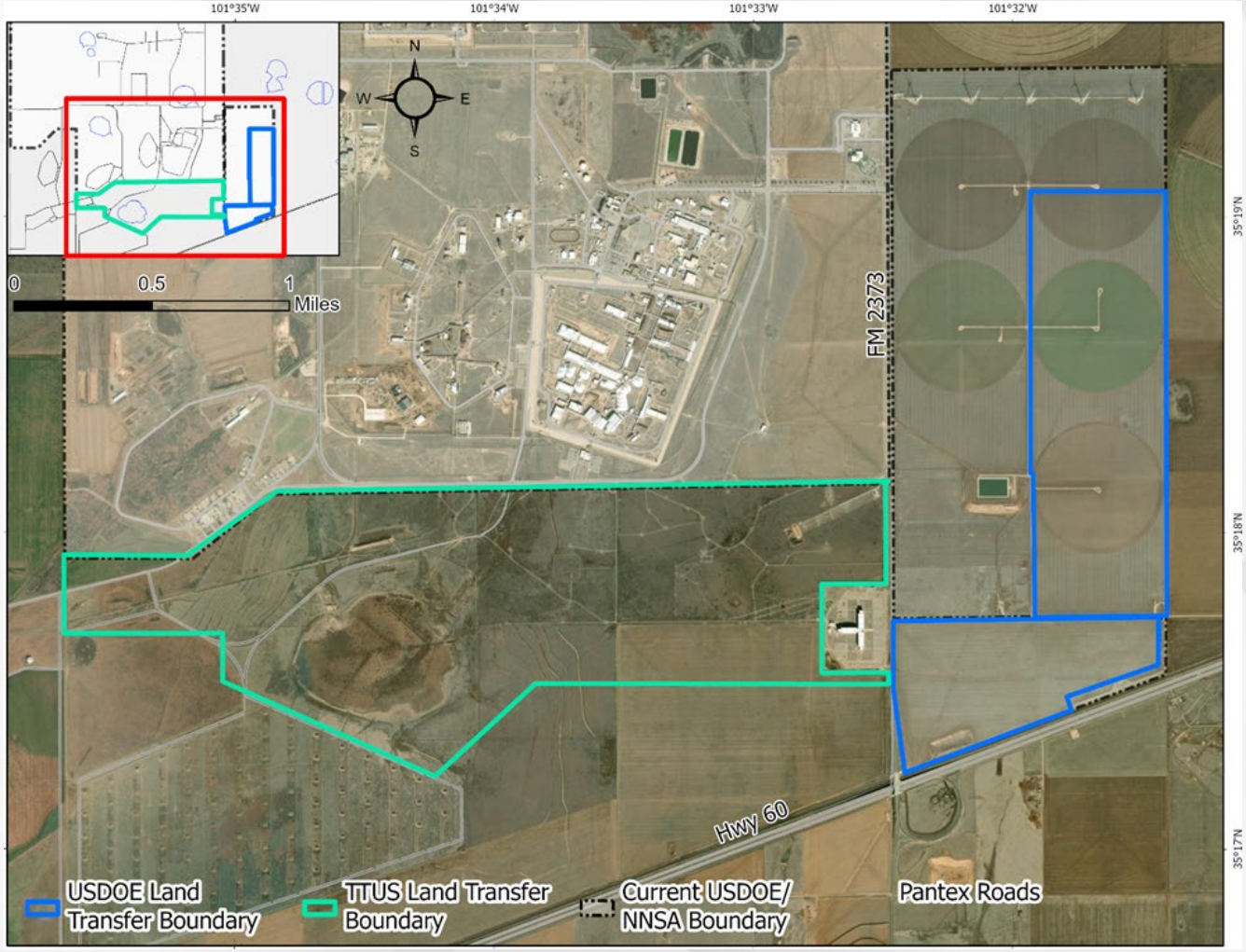
- **The new FYR final report was submitted to TCEQ and EPA in September 2023**
  - EPA and TCEQ concurred with the report in September 2023
- **3rd Five Year Review Action Tracking:**
  - Issues and Recommendations to Optimize Remedies:
    - Two issues for soil remedies
    - Six issues for groundwater remedies
    - One recommendation for soil remedies
    - Four recommendations for groundwater remedies
    - One recommendation for the LTM Network
    - Identified actions to take before the next Five-Year Review
- **Overall Conclusion**

  The remedial actions are protective in the short-term; continued operation of Pump and Treat Systems and In Situ Bioremediation Systems are needed to achieve long-term protectiveness

3rd Five Year Review

- **2024 Completed Actions from the 3rd Five-Year Review**
  - Pantex incorporated 1,4-dioxane into the updated Pantex Plant Ogallala Aquifer and Perched Groundwater Contingency Plan (March 2025), with steps to take if concentrations increase at specific wells.
  - Pantex sampled a strategic subset of existing perched groundwater LTM wells to begin defining the extent of PFAS impacts at the Pantex Plant.
  - Pantex has reviewed injection volumes across the wells at the Zone 11 ISB to verify that sufficient volume of amendment water is being injected to distribute the amendment away from injection wells.
  - Pantex continued the groundwater sampling program at wells PTX01-1001, PTX01-1010, and PTX01-1011 to obtain data to support closure of the Burning Ground SVE system – wells continue to be included in our Sampling and Analysis Plan
  - Pantex increased the time until the next injection event at the Southeast ISB Extension to assess if TOC concentrations remain elevated for longer than expected and the system can be injected less frequently. Pantex plans to inject yearly based on data collected at the system.
  - Pantex updated the Long-Term Monitoring System Design and the Sampling and Analysis Plan to reflect applicable recommendations from the 2022 LTM optimization study.

Data Center and Expected Changes



Pantex to Acquire Property from Texas Tech University System (TTUS) (green area)

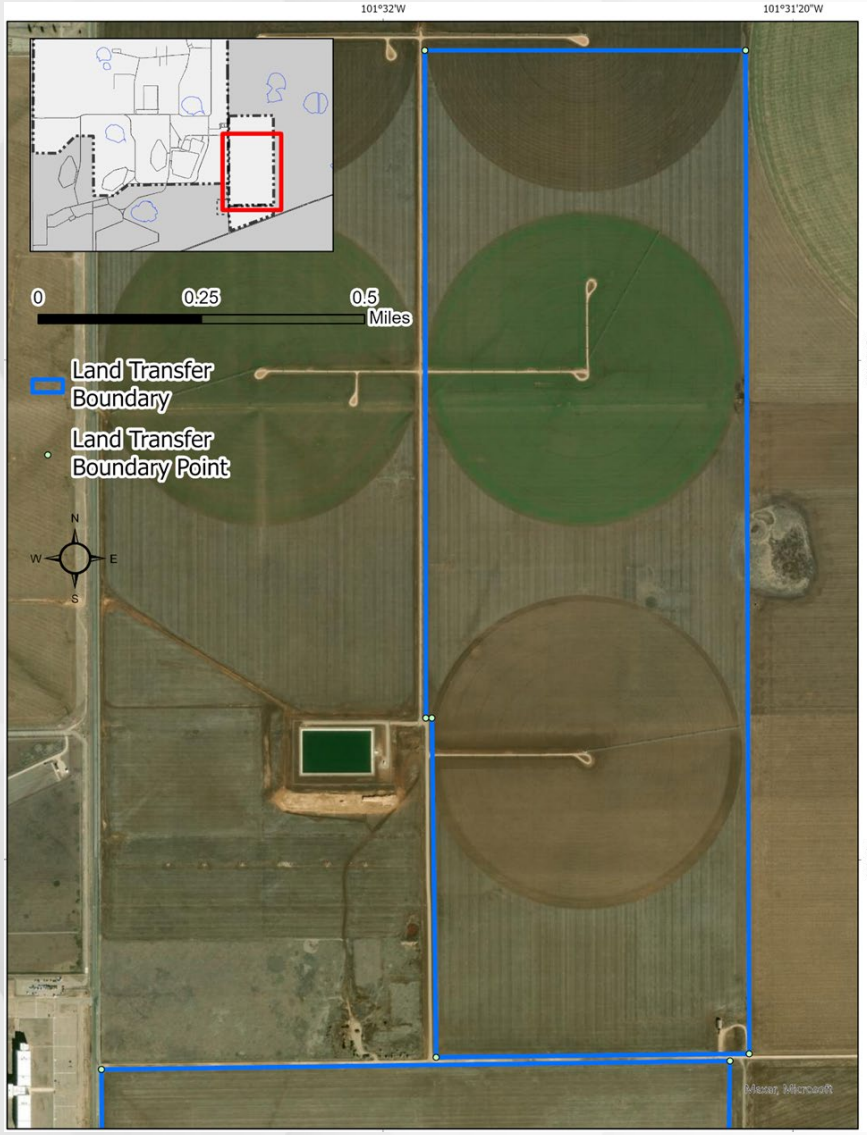
- Approximately 1278 acres along the south Pantex boundary would be acquired from TTUS

TTUS to Acquire a Portion of the NNSA Property East of FM 2373 (blue area)

- Approximately 713 acres to be transferred

Data Center and Expected Changes

- **Two and a half pivots would be shut down and no longer used; closure under permit WQ0004397 (TLAP).**
- **Surface irrigation would be maintained to support transition to AI Data Center operations.**
  - Two and a half pivots (1, 2N, and 3) would be retained on NNSA land for continued use; future decisions regarding these areas would be shaped by how/when the Data Center develops.
- **As the Artificial Intelligence (AI) Data Center is constructed and operations begin, treated water from the Pump and Treat Systems would begin to be used for cooling water.**



AI Data Center and Expected Changes

Pantex is currently preparing a Covenant Deferral Request (CDR) pursuant to Section 120(h)(3)(C) of CERCLA

- **Provides detailed information on the remedial actions, potential impacts due to transfer, and steps that will be taken to ensure remedies continue without delay and to ensure protection of human health and the environment**
  - Current Ogallala and PFAS investigations and any possible remedial actions required are also considered in the request.
- **Public comment period is anticipated in early 2026 – Notice of availability will be provided in local newspapers**
- **The final draft is expected to be submitted to the EPA, TCEQ, and Texas Governor in February/March 2026**
- **The land transfer is expected to occur after Pantex gains concurrence on the CDR**

AI Data Center and Expected Changes

Covenant Deferral Request Considerations

- **Pantex Plant would gain land in this agreement, allowing for future growth of the Pantex Plant in support of the mission**
- **Continuation of long-term investigation and remediation is ensured through agreements, deed restrictions, and retention of land where remedial actions are installed**
- **Pantex would have a more consistent and stable outlet for pump and treat effluent so Pantex can better achieve its goals for cleanup of perched groundwater**
  - Supports more consistent operation of the Pump and Treat Systems
  - Supports minimizing discharge into Playa 1

Questions

Reports and slides can be found at:

http://pantex.energy.gov/mission/environment/environmental-cleanup-documents

Remediation Summary Booklet – available here and on our website

Fact Sheets – available here and on our website

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